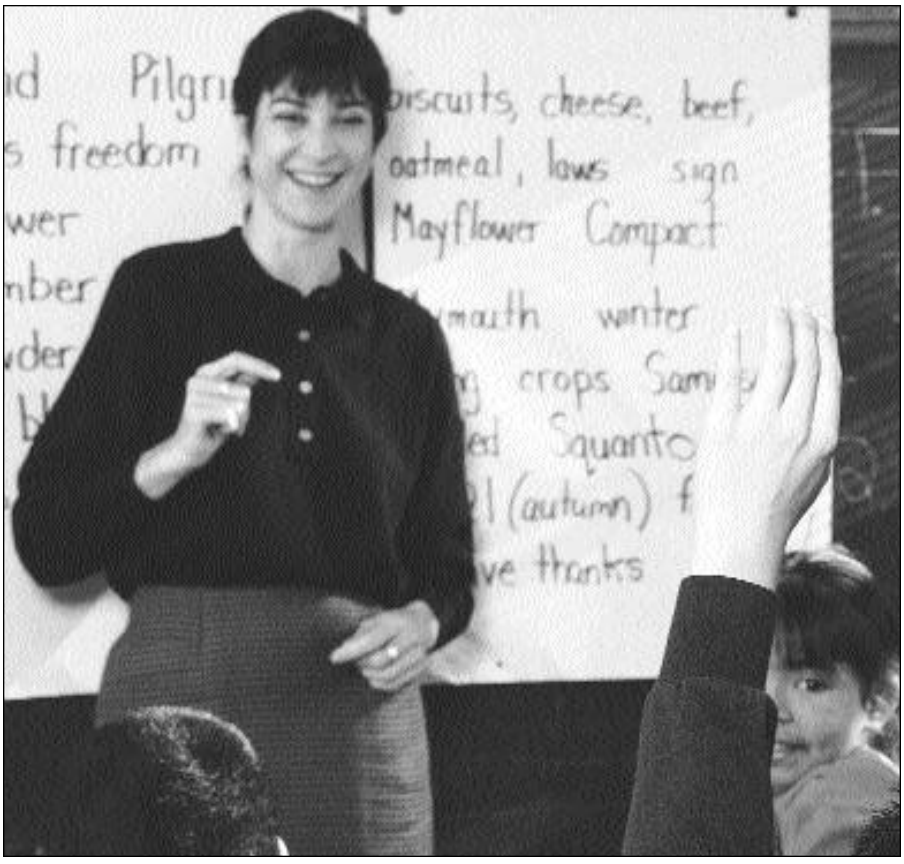
Chapter 5

WORKING WITH STUDENTS USING THE CROSS-CONTENT WORKPLACE READINESS STANDARDS



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INTRODUCTION

To help prepare students for a rapidly changing world, the New Jersey State Board of Education adopted five cross-content workplace readiness standards to be integrated with the seven sets of academic standards. These workplace readiness standards (listed below) define the skills that students need as they pursue college, careers, and adult responsibilities as citizens.

Standard 1: **All students will develop career planning and workplace readiness skills.**

Standard 2: **All students will use information, technology, and other tools.**

Standard 3: **All students will use critical thinking, decision-making, and problem-solving skills.**

Standard 4: **All students will demonstrate self-management skills.**

Standard 5: **All students will apply safety principles.**

Unlike the cumulative progress indicators (CPIs) for the other content areas, the workplace readiness indicators are not organized by grade-level clusters because, in addition to crossing all content areas, they also cross grade levels. Teachers and counselors should integrate these concepts into all programs in content-specific and developmentally appropriate ways. To strengthen the linkages between the content area standards and the cross-content workplace readiness standards, the learning activities of the Social Studies Framework and other frameworks include interdisciplinary approaches to workplace readiness. Table 11 provides some additional suggestions for integrating workplace readiness indicators into a social studies program.

Table 11
Suggestions for Integrating Workplace Readiness Indicators into the Social Studies Program

WORKPLACE READINESS INDICATORS	CIVICS	HISTORY	ECONOMICS	GEOGRAPHY
Identify career interests; develop a career plan (Standard 1)	Keep a journal of your interests and special talents. Investigate various types of professions and jobs related to your interests.	Read a biography of someone whom you admire. Identify traits that helped or hindered the subject in pursuit of his/her work.	Monitor your learning style each day. Identify areas in which you do either well or poorly. Strive to improve. Determine how improvement occurred. Repeat the process.	Identify geography-related jobs or careers in the want ads of a city newspaper and the salary ranges for them. Write a letter of application for one of these jobs and prepare a resume.
Demonstrate financial skills (Standard 1)	Do group work to analyze the current federal and state budgets and to place them in historical and political contexts.	Calculate the costs connected with the American Civil War. Research the relative value of money in 1861. Estimate the costs in current U.S. dollars.	Research the supply-and-demand issues around the North American Free Trade Alliance. Study market fluctuations around this issue.	Do the necessary comparison shopping to buy materials for a project to build a large-scale relief map of the New Jersey terrain (including the hill country, the Pinelands, and the shore areas).
Access and use technology; understand technological systems (Standard 2)	Work through the CD-ROM Branches of the Government and develop a study guide for its use by other students.	Do a search (e.g., using Lycos or Infoseek) and prepare an annotated listing of Internet sites on selected topics in American history.	Monitor selected online stock market sites and prepare a time series chart of fluctuations in 10 blue chip stocks over a month. Relate the activity in the market to current events.	Use the Geographic Information System (GIS) to develop a profile of several New Jersey counties as part of a needs assessment for the building of a new community.
Plan experiments; interpret and use data (Standard 3)	Plan and conduct a survey of community voting patterns based on party registration records.	Do a statistical study using the computer to study voting records over five decades.	Plan, conduct, and report on a group study of economic trends in New Jersey over a 50-year period.	Carry out several field trips to develop a comprehensive map of the community within five miles of the school.
Self-management (Standard 4)	Write a rationale for good citizenship, including voting, obeying the law, and doing productive work.	Study the significance of the critical timing of events in a recent historical event and relate this to the timing of an event in your own life.	Recognize money decisions you make every day. Make a list of spending and saving events in your life during the last month.	Design a rubric for assessing work on major graphics in a world populations study.
Work cooperatively with others and with groups (Standard 4)	Develop positive attitudes toward work and coworkers. Learn to respect the need for rules.	Participate in or conduct a Crossfire-type debating club in which opposing views are presented and argued in a democratic environment.	Organize a group to work on preparing a PowerPoint presentation on the township budget.	Participate in group projects to create multimedia exhibitions of geographic phenomena such as physical and demographic maps of major regions.
Safety (Standard 5)	Develop guidelines for promoting the general welfare and the safety of all citizens. Describe how these guidelines can prevent injury.	Research issues of physical safety and well-being at various points in history.	Develop a program budget for a safety and risk-prevention education initiative to be conducted by the school.	Identify and describe OSHA rules and other health/safety rules applicable to the environment.

To prepare students adequately for the world of tomorrow, teachers should enlist the assistance of additional members of the educational team (such as the school counselor, school nurse, and school library media specialist) as well as the business community in the delivery of workplace readiness knowledge and skills. For example, the school counselor is able to coordinate, consult, collaborate, serve as a resource, and facilitate in order to assist students in the academic, vocational, and personal arenas. School nurses, drawing from their knowledge of the healthcare system, can facilitate service learning experiences, arrange for speakers, coordinate visits to community agencies and healthcare providers, and provide hands-on working experiences in the school health office. Library media specialists provide print and technological resources in the library media center that are available to all students during the entire school day and, often, before and after school. The resource people can assist by supporting cross-curriculum and multidisciplinary instruction for all grades and reading levels. Members of the business community can serve as speakers, provide state-of-the-art materials and/or information, and serve as mentors in work-based experiences or part-time employment.

The counselor is pivotal to the success of integrating into the instructional program any school-based and work-based learning experiences. It is equally evident that the roles of other specialists within the school and work environments need to evolve with the implementation of the cross-content workplace readiness standards. Also, the connecting activities between school and work need to be facilitated at the administrative level in each district. With the integration of the cross-content workplace readiness standards, each content framework assists the entire educational team in the process of curriculum development, revision, and implementation.

PUTTING IT ALL TOGETHER

As society becomes more complex, "traditional" education becomes less relevant due to its fragmentary nature. A more effective and engaging approach to educating can be found in the combining of two existing instructional approaches. The combination of **interdisciplinary instruction**, which combines several content disciplines in a common lesson or activity, and the use of a **systems approach** to develop an overview perspective of the actions and forces that impact the activity will produce a highly motivating and engaging frame for learning. Such an approach encompasses **experiential education** where students learn by doing, by helping to select and design projects, by researching possible solutions, by presenting their work to outside review panels, and, finally, by evaluating their work on their own terms. Academic content is integrated into all of these activities so that students keep up with, and actually surpass, what the standards require.

The use of hands-on learning activities increases opportunities for student involvement and adds a sense of personal meaning for the students. They are given an opportunity to practice interacting with the real world around them. Students are excited and motivated by projects in which they play key decision-making roles. They learn to communicate, to create, to think on their feet, and to meet tight timelines. They learn how to work on a team, how to be responsible leaders, and how to listen to and carefully consider the ideas of others. Throughout the process, students gain confidence from the respect and self-satisfaction their success earns.

The following three vastly different scenarios illustrate the interdisciplinary, systems- thinking approach. While they are presented in elementary, middle, and high school categories, the scenarios can be adapted to other developmental levels through the creativity of the teacher/facilitator.

Elementary School Level: The Pyramid

Reconstruction Systems Thinking Project

The primary task of this activity is to engage students in grades 3 and 4 in an activity that provides them with an opportunity to discuss and debate the system support mechanism that needed to be in place to allow the great pyramids of Egypt to be constructed.

Note: Student problem-solving and thinking processes are the important aspects. This activity also focuses on the ability to communicate the results to other members of the class.

Background. The Great Pyramids of Giza, built over 4,500 years ago, continue to impress modern-day engineers and technologists. These tombs are the most famous pyramids, but there are more than 80 other pyramids in Egypt. The largest of the three, the Great Pyramid of King Khufu, was built about 2550 B.C. At its peak, it was 481 feet tall and had a square base of 756 feet on each side. Approximately 2,300,000 blocks of solid limestone, each weighing about 2.5 tons, were used in its construction. Many scholars have offered theories on how the Egyptians accomplished their construction; however, there is no definitive proof substantiating their findings.

The Problem. The ancient Egyptians were faced with many problems while building the pyramids at Giza 4,500 years ago. One of the most obvious problems that they had was moving heavy blocks of stone (about 2½ tons each) into position to build the pyramid. The largest pyramid at Giza is over 450 feet high and used over 2 million stones. To imagine how high the pyramids actually are, they would be more than 1½ football fields standing end on end. **The problem is to discover a successful technique to move a large stone up an inclined plane**

The Materials. The materials are a stone, an inclined plane, sand, water, rope, and wood.

Quality Workers. The Egyptians needed to be quality workers. Clearly, their finished project is evidence of their ability to work both individually and in teams. Obviously, the Egyptians understood a great deal about technology and practical problem solving; they were critical thinkers who knew how to make decisions. We know that there was division of labor among the ancient Egyptian workers. For example, there were surveyors, stone cutters, rope pullers, engineers, and architects and designers.

The ancient Egyptians worked on the pyramids only three months of the year. They were unable to work when the Nile River overflowed from June to November. Workers demonstrated self-discipline and self-management skills. The Egyptians needed to be safety-minded to insure that the people who were doing this dangerous work would not be hurt.

Sample Connections. Identified below are some examples of how the classroom teacher may emphasize various content areas around this specific activity and theme.

- **The Arts (Visual and Performing)**—Elements of design and aesthetics in the beauty of the pyramid itself may be explored. For example, the interior walls were decorated with paintings. Some of the objects found within the pyramid might be art or artistically designed products.

- **Comprehensive Health and Physical Education**—Students may explore the diet of the ancient Egyptians in explaining how they were physically and mentally fit for this arduous task.

- **Language Arts Literacy**—Although students will use all of their language arts literacy skills throughout this activity, emphasis may be placed on the student's ability to speak to his or her audience during a culminating presentation on the activity. Further research on topics of interest to the student may be pursued.

- **Mathematics**—Students will explore the importance of geometric shapes and properties in designing the pyramids.

- **Science**—Students will explore the impact of how the needs of the building system were satisfied by a variety of services. Students can construct a chart or diagram that illustrates a variety of system components that would be necessary to support the building project. Include items such as where the water to drink would come from and how it would have been transported and stored. Groups of students can discuss, research, and present to the class a variety of system needs, conveying what, where, and how much of the support would have been needed for the project. Discuss the principles of levers and wheels.

- **Social Studies**—The Egyptian culture will be explored. Students will examine the significance of the pyramids as well as how human beings learn to work together in teams. (It is estimated that between 40,000 and 50,000 people worked collaboratively on the goal of completing the pyramid.)

- **World Languages**—Students will explore related aspects of the Egyptian culture that required early settlers from different communities on the Nile to agree to use hieroglyphics to assist their interaction for the purposes of economics, agriculture, and the building of the pyramid.

Middle School Level: The Real Game

Forty-six New Jersey school districts participated in "The Real Game" pilot program in April 1998. The Real Game is a hands-on, practical, experiential learning program that allows students to experience various aspects of the working world by using role playing and game devices. It is cross-curricular and designed for middle and junior high school classes (primarily seventh and eighth grades) with a maximum of 40 students. (Additional versions, ranging from grade 1 through adult, are currently being planned, developed, and/or field tested by the National Occupational Information Coordinating Committee [NOICC].) Through a series of interdisciplinary exercises and events guided

by teachers or counselors, students become more aware of the world of work and how their actions in school affect their futures. Anecdotal records from New Jersey teachers indicate that content area teachers have reported increased student interest in academics as they begin to see the relevance of their studies to life.

How does The Real Game work? Each of the five units is described below.

Unit 1: Learning a Living. In this first unit, the students are given an overview of The Real Game. The game is presented as a journey in career exploration that will bring the students to "assume the mantle of the expert." The students are informed that they will, through a randomly chosen occupation, explore aspects related to adult life in our society. In order to assess their current knowledge of terminology and other aspects related to the work world, students complete a questionnaire. (They fill out the same questionnaire at the end of unit 5 to evaluate their progress.) The students play the first round of The Spin Game (an interdisciplinary multiple-choice question-and-answer game) and form groupings that serve as the basis of many subsequent activities for The Real Game program.

Unit 2: Making a Living. In the second unit, the students really take on their roles. Four activities help them to gradually imagine themselves as adult workers. First, the students explore and express their dreams by choosing items on the Wish List that they would like to have in their adult life. Reality comes into play when students have to balance their monthly budgets (by applying their mathematical skills) and assess what they can actually obtain while taking income and chance (represented by Chance Cards) into consideration. The students then start to personalize their Activity Poster as they gather information on their neighbors' occupations. Some elements on the Activity Poster include transferable skills, annual holidays, gross and net monthly income, income tax, bills, and expenses.

Unit 3: Quality of Life. In unit 3, the students choose leisure and holiday activities while still taking into account the profile assigned to them. They examine their necessary daily activities and then choose activities to do during their free time. The students then plan a group holiday while taking into account their budget and the amount of vacation time each member has. This is an exercise in negotiation that will give them the opportunity to research specific destinations as well as a variety of occupations in the travel industry.

Unit 4: Changes and Choices. By participating in this unit's five activities, the students are made aware of unexpected elements that occur in the work world and in life. Unforeseen circumstances change the course of the game as students must offer support and assistance to colleagues who are faced with a job loss. Activities such as group discussions and essays help students think of positive actions that may bring new possibilities. Finally, the entire class is rendered jobless by large-scale disasters. While working as a team, the students offer solutions and learn how their transferable skills will enable them to grasp other opportunities. The students then play the second round of The Spin Game so that they may continue to explore the occupations, terminology, and links that exist between their schooling and the work world.

Unit Five: The Personal Journey. In the last unit of the Real Game, the students imagine themselves in the future and must reflect on their career journey by talking with individuals in the community. Guest speakers are invited to a Career Day. Activities such as these enable the students to share their experiences and new knowledge as well as gather information on the present work world and a variety of careers.

High School Level: The Life Cycle of a Pencil

Activity. Provide each student with a wood pencil. Have them brainstorm on the board a list of materials that make up the pencil, along with the natural resources from which they are derived. Ask them where these natural resources and other materials come from. Discuss possible origins, and locate these on a world map. Have the students learn the word for **pencil** in the languages of each country and determine whether pencils are in fact used in each country. A list of the components of a wood pencil and their possible origins is provided below:

- Copper - Canada
- Zinc - Poland
- Clay - Mississippi
- Incense Cedar - California
- Graphite - Sri Lanka
- Rubber - Brazil
- Petroleum - Saudi Arabia
- Gum (sap) - Mexico
- Pumice - Italy

Discuss with students the appropriate first aid if someone is accidentally stuck with a pencil. Then have the students consider the life cycles of a wooden lead pencil "from cradle to grave." Where do the makings of a pencil begin? Where does a pencil stub go? Draw a large circle on the board with a pencil in the middle of it. Locate steps regarding the formation, use, and disposal of a pencil in appropriate areas around the circle. Sample steps are given below:

1. Wood is harvested; truck hauls tree to mill.
2. Mill prepares lumber; lumber is shipped to factory.
3. Graphite is mined and shipped to factory.
4. Clay is mined and shipped to factory.
5. Gums are tapped, prepared, and shipped to factory.
6. Pencils are manufactured.
7. Trucker hauls pencils to warehouse or railroad.
8. Trucker hauls pencils to wholesale dealers.
9. Trucker hauls pencils to retail stores.
10. Customer drives to store to buy pencils.
11. Customer uses then discards pencil.
12. Pencil hauled to landfill or incinerator.

Have the students identify the forms of energy (including human) required to extract, process, manufacture, and transport the pencils. Identify various modes of transportation that are available. Identify where materials might be reused or recycled. Throughout the process, identify and research related careers. These other activities usually require a smaller set of steps and can be drawn as smaller concentric circles overlapping with larger circle.

Have the students provide examples of feedback that can be obtained throughout the "life cycle" of a pencil. Have the students explain how that feedback is used to control, alter, or affect the behavior of a system. Examples include the following:

- Overall demand for, and sales of, pencils
- Seasonal fluctuation of pencils, or decrease or increase of sales
- Availability of refillable, plastic pencils and the subsequent need to find new markets for lead pencils
- Increased postage for shipping
- Increased gasoline prices for hauling
- Minimize the environmental impacts of graphite mining, causing a rise in production costs
- Development of a new technology that is only feasible if greater bulk of pencils are produced; finding new markets becomes a priority.
- Use only recycled materials in designing pencil packaging.
- Competitor has lower price per pencil, so production costs must be cut to compete.

Extension. Identify materials that are generated or produced in your local community. Have groups of students select one and research its origins, use, and disposal from "cradle to grave." Multiple sources of information from the library media center and the community should be accessed, including local tours, visuals, interviews, the Internet, etc. Have students present their findings using a variety of media. Identify and research related careers. Invite guest speakers to address the students at a career day.

References. This activity was adapted from "Resource-Go-Round," a Project Learning Tree Activity Guide (pp. 316-319).

Hawass, Jahi. June 1999. "Who Really Built The Pyramids?" Archaeology Odyssey.Vol. 2, No. 2. pp. 48-55.